In re Application of: Abraham KRIBUS et al.
Serial No.: 10/556,341
Filed: April 17, 2007
Office Action Mailing Date: January 20, 2010

Examiner: Stephen Michael GRAVINI
Group Art Unit: 3743
Attorney Docket: 30903
Confirmation No.: 8459

In the Claims:

1-69. (Cancelled)

70. (Currently Amended) A solar power system comprising:

at least one solar radiation concentrator having an optical focal point and having an aperture of between about 0.5 m and about 2 meters, adapted for focusing incident solar radiation, said at least one solar radiation concentrator configured to achieve at least 200 suns concentrating ratio;

at least one power conversion unit which receives said light after being focused; and

at least one solar tracking apparatus comprising at least one rotational drive.

71. (Previously Presented) The system according to claim 70, wherein the system is configured for generating electric power and heat.

72. (Previously Presented) The system according to claim 70, wherein the system is configured for generating electric power.

73. (Previously Presented) The system according to claim 70, wherein the system is configured for generating heat.

74. (Previously Presented) The system according to claim 70, wherein said solar radiation concentrator is shaped as a concave parabolic dish with diameter of about 1.1 meters.

75. (Previously Presented) The system according to claim 70, wherein the solar radiation concentrator is shaped as a dish or a polygon.

76. (Previously Presented) The system according to claim 70, wherein said at least one rotational drive comprises a radio-dial type drive.

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77. (Previously Presented) The system according to claim 76, wherein said radio-dial type drive is configured to have substantially zero backlash.

78. (Previously Presented) The system according to claim 76, wherein said radio-dial type drive is configured to have substantially zero drift.

79. (Previously Presented) The system according to claim 76, wherein said radio-dial type drive comprises a cable wrapped about a rotational element under a tension sufficient to have substantially zero backlash and substantially zero drift to avoid slack and slippage between the cable and the rotational element.

80. (Previously Presented) The system according to claim 70, wherein the tracking apparatus comprises two rotational drives rotating around two non-parallel rotation axes.

81. (Previously Presented) The system according to claim 70, further comprising a controller configured to maximize the radiation flux on the power conversion unit, using at least one of (a) a calculated expression based on geographical and time data, (b) a closed loop correction based on a measurement of at least one of the radiation flux or the generated output power.

82. (Canceled)

83. (Currently Amended) The system according to claim ~~82~~ 70 wherein the solar radiation concentrator is configured to concentrate to at least about 800 suns.

84. (Previously Presented) The system according to claim 70, wherein the power conversion unit comprises at least one of a thermal engine and one or more concentrated photovoltaic cell.

85. (Previously Presented) The system according to claim 71, characterized by a combined conversion efficiency to heat and electricity of at least 60%.

86. (Previously Presented) The system according to claim 85, wherein the combined conversion efficiency is about 80%.

87. (Previously Presented) The system according to claim 70, further comprising a coolant fluid mechanism adapted to heat the coolant fluid to at least 120°C by absorbing heat from the power conversion unit.

88 (Previously Presented) The system according to claim 87, wherein the coolant fluid mechanism is adapted to heat the coolant fluid to at least 180°C.

89. (Previously Presented) The system according to claim 70, wherein said at least one solar radiation concentrator and said at least one power conversion unit comprise a plurality of solar radiation concentrators and a plurality of power conversion units configured to be installed on a single said solar tracking apparatus.

90. (Withdrawn-Currently Amended) A solar plant comprising one or more solar collectors, wherein at least one of said solar collectors comprises:

at least one solar radiation concentrator having an optical focal point and having a diameter smaller than about 2 meters with at least 200 ~~to 800~~ suns concentration, adapted for focusing incident solar radiation;

at least one power conversion unit which receives said light after being focused; and

a solar tracking apparatus comprising at least one rotational drive.

91. (Withdrawn) A solar plant according to claim 90, wherein said one or more collectors comprises a plurality of collectors which share a fluid pathway.

92. (Withdrawn) The solar plant according to claim 90, further comprising a controller, which controls at least one solar tracking apparatus.

93. (Withdrawn) The solar plant according to claim 91, wherein said one or more solar collectors further comprising a coolant fluid mechanism, and wherein said fluid pathway comprises a common closed loop coolant system.

94. (Withdrawn) The solar plant according to claim 93, wherein said closed-loop coolant system comprises at least one heat exchanger.

95. (Previously Presented) A method for supplying energy, the method comprising:

providing at least one solar collector, comprising:

at least one solar radiation concentrator having an optical focal point and having a diameter smaller than about 2 meters, adapted for focusing incident solar radiation;

at least one power conversion unit which receives said light after being focused; and

a solar tracking apparatus comprising at least one rotational drive; and

supplying at least one of a hot fluid and electric power to one or both of at least one appliance, and at least one power grid or both, using the at least one solar collectors.

96. (Withdrawn) The method according to claim 95, wherein the at least one appliance comprises a space heater comprising a heat exchanger.

97. (Withdrawn) The method according to claim 95, wherein the at least one appliance comprises an air conditioner comprising at least one absorption chiller.

98. (Withdrawn) The method according to claim 95, wherein the at least one appliance comprises a hot water supply comprising a heat exchanger.

99. (Withdrawn) The method according to claim 95, wherein the at least one appliance comprises a plurality of appliances, and wherein the supplying of the hot fluid comprises supplying the hot fluid at substantially different temperatures to each of at least two of the plurality of appliances.

100. (Withdrawn) The method according to claim 95, further comprising discarding excess heat.

101. (Withdrawn) The method according to claim 95, further comprising transmitting electric power to an electric grid.

102. (Previously Presented) The system according to claim 70, wherein each of said at least one concentrator has a single focal point.

103. (Previously Presented) The system according to claim 102, wherein each of said at least one power conversion unit is positioned substantially at said focal point.

104. (Previously Presented) The system according to claim 103, wherein each of said at least one concentrator has a dish-like configuration.

105. (Previously Presented) The system according to claim 103, wherein each of said at least one concentrator has a polygonal configuration.

106. (Previously Presented) The system according to claim 70, wherein each of said at least one concentrator has a focal line.

107. (Previously Presented) The system according to claim 106, wherein each of said at least one concentrator has a trough-like configuration.

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108. (New) The solar plant according to claim 90, wherein said solar radiation concentrator has up to 800 suns concentration.